

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**REGION 5**  
**AIR AND RADIATION DIVISION**  
**77 WEST JACKSON BOULEVARD**  
**CHICAGO, IL 60604-3590**

**MEMORANDUM**

**DATE:**

**SUBJECT:** Unannounced Inspection of Madison-Kipp Corporation  
Madison, Wisconsin

**FROM:** Jeffrey Gahris, Environmental Engineer  
Enforcement and Compliance Assurance Section (MI/WI)  
Enforcement and Compliance Assurance Branch

**THRU:** Sara Breneman, Chief  
Enforcement and Compliance Assurance Section (MI/WI)  
Enforcement and Compliance Assurance Branch

**TO:** File

Source Name and Location:

Madison-Kipp Corporation  
Atwood and Fair Oaks Plants  
201 Waubesa Street  
Madison, Wisconsin 53704-

SIC Code: SIC 3363, for aluminum die castings

Date of Inspection: January 12, 2011

Safety:

Steel-toed boots, hardhat, hearing protection, and goggles were required; should wear cotton "greens" when approaching melting furnaces.

Attendees:

Jeffrey Gahris, Environmental Engineer  
United States Environmental Protection Agency (EPA)

Mark Meunier, Vice President, Human Resources  
Madison-Kipp Corporation (Madison-Kipp)

James Lenz, Engineering Services and Environmental Manager  
Madison-Kipp

Kim Eggers, Director, Environmental Health & Safety  
Madison-Kipp

Process Description and Permits:

Madison-Kipp operates secondary aluminum production facilities at two plants in Madison, Wisconsin. The plants are connected by a path where materials may be transferred back and forth. Accordingly, Wisconsin DNR (WDNR) determined that the plants are one facility for permitting purposes. The Atwood Plant in particular is nestled between rows of single-family homes in a primarily residential area of Madison. The home appeared to be as little as 20 feet from the plant building.

Aluminum is produced in two melting furnaces at the Atwood Plant, and one furnace at the Fair Oaks Plant. Madison-Kipp is permitted to inject chlorine gas into its Atwood Plant furnaces to remove magnesium for the aluminum alloys being produced. The Fair Oaks Plant has one furnace, which does not use chlorine. Dross is the waste material skimmed off of molten baths of aluminum in the furnaces.

The federally-enforceable state operating permit, number 113125320-F10, was issued July 30, 2008. It will expire on July 30, 2013. See attached. The permit does not include conditions for the secondary aluminum production MACT at 40 C.F.R. Part 63, Subpart RRR. WDNR and EPA had previously determined that Madison-Kipp is not subject to the rule.

Opening Conference:

After driving around the residential neighborhood surrounding the plant, I arrived at the front entrance around 1:15 pm. I met the receptionist and presented my credentials. After a short delay, I was greeted by Mark Muenier of Madison-Kipp. We discussed the scope and purpose of the inspection, which was to determine Madison-Kipp's compliance with the Clean Air Act and the operating permit conditions. James Lenz joined us during this discussion. Later, Kim Eggers also joined us.

Mr. Muenier described Madison-Kipp's activities as follows:

1. The plant has reduced its use of chlorine to a typical value of 1.5 pounds per hour. The permit allowable is 35 pounds per hour, but the auto industry has relaxed the amount of "demagging" needed. There are only 1500 pounds of chlorine kept on site.
2. Customer returns and oily materials are not recharged into the furnaces, but rather, they shipped out for processing.
3. About 50 percent of the aluminum is used to make die-cast parts for the automobile industry; the balance is for motor cycle parts and other industries that make small engines.

4. The plant no longer has a major source renewable operating permit under Title V. Madison-Kipp reviewed the assumptions used to estimate emissions and found them unrealistic. This prompted the company to apply for a federally enforceable state operating permit.
5. Over time, some die cast machines were added, while others were removed. WDNR does not require construction permits for gradual rotation of new process equipment installation over a 1.5 year period.
6. Only one of the two furnaces is currently operating at the Atwood Plant.
7. Madison-Kipp keeps records for metal production by weight. Throughput is also tracked by the number of die cast machine "shots." Metal production at the Atwood Plant is about 200,000 pounds per year; the Fair Oaks Plant production is about 175,000 pounds. Production has been "ramping up" due to improved economic conditions.
8. Chlorine consumption is tracked on an hourly basis.

Plant Walk-Through and Observations (Atwood Plant):

I was led through the plant by Mark Meunier and James Lenz. Observations and discussion:

1. I observed haze in the air as we passed through the die-casting room.
2. Chlorine is kept in a cinder block room for purpose of safety. Emissions are controlled by a scrubber.
3. I noted an Ingersoll-Rand air compressor with refrigerant to remove moisture. The nameplate identified 7 pounds of R-22 refrigerant. I explained that leak detection and repair requirements apply to appliances containing over 50 pounds of refrigerants.
4. We examined the reverberatory furnaces, which were described as being over 10 years old. One of the furnaces was operating. Aluminum die casting runaround was being dumped into a hopper and fed to the furnace using a vibratory feed. The vibration is used to shake out any water that may be present.
5. Operators add a cover flux to the charge well. The added chlorine is enough to keep the furnace clean.
6. I noted that the dross skimming and charge wells are under one large hood with rubber flaps to improve capture. I did not witness any charging of materials.
7. Emissions from each furnace are directed to a corresponding and dedicated tall black stack.

8. I observed a Safety Kleen parts washer with the lid closed. Plant representatives explained it contained Stoddard solvent and was one of seven located in the plant.
9. The plant has air make-up units. Plant air is then passed upward through the shorter silver roof stacks.
10. Madison-Kipp currently employs 380 people, and hires 90 temporary workers during its busy season in May.
11. I observed oily scrap in a bin near the die cast machines. Someone explained a die cast machine was cleaned out, and that the scrap is shipped to Aleris in Chicago Heights, Illinois. Nearby, I saw small rejected aluminum parts in a bin labeled "clean charge only."

Plant Walk-Through and Observations (Fair Oaks Plant):

We walked to the Fair Oaks Plant using an interconnecting path. I noted the following:

1. The plant has a heat treating furnace for "aging" die cast products at 500°F.
2. Again, the die cast room was hazy.
3. A plant representative mentioned that the die cast process emissions were tested 4 to 5 years earlier. There had been prior testing also.
4. Furnace 12 is a reverberatory furnace with one large hood that covers a shelf where sows are preheated. The furnace also features a vibratory feed and a tapping port. A plant representative claimed that they do not use chlorine in this furnace.
5. Madison-Kipp stated that all returns from die-cast operations at both plants come to the Fair Oaks Plant for re-melting. The bins containing the scrap were labeled as "clean" scrap.
6. I noticed some carbon buildup on the scrap parts.
7. I observed a bin labeled "dross," which goes to Aleris in Chicago Heights for processing. I saw another bin labeled "oily aluminum."

Records Review and Inspection close-out:

We reviewed Madison-Kipp's compliance-related records on a computer screen. We discussed the following:

1. Plant representatives explained that they can track start-stop times of chlorine usage by each hour. They also track percent magnesium, the molten metal level (recorded as inches below "full") and pump current draw in amperes. If any conditions are exceeded, the process feed executes an automatic shut-off with an alarm. Chlorine feed also stops.

2. The chlorine meters are calibrated annually. They compare meter readings to a weighed container, claiming one percent accuracy. They determined the accuracy during the last calibration (November 2010) to be 0.86%.
3. Due to database issues, they could not show 2011 data on the computer at the time of inspection. They questioned the accuracy of their 2011 data as displayed on the screen.
4. Madison-Kipp recently performed Method 202 testing in order to obtain the new operating permit.
5. The metal throughput at the Atwood Plant was 120,012 pounds/day max, which is at 60 percent of the permitted limit. The highest production level at the Fair Oaks Plant was at 66 percent of the permitted limit. The figures track total pounds shot into the die, including the sprues and runners. Madison-Kipp also tracks plant runaround and oily scrap.

Madison-Kipp periodically tests the die lube ratio. I asked for an MSDS sheet for the currently used die lube. My on-site review showed for Chemtrol's Lubricant 899:

Dodecane — 50 to 10 percent, and  
residual oil — 1 to 5 percent.

Madison-Kipp has a certified smoke reader on staff who takes readings and records them on an observation sheet.

After thanking Madison-Kipp representatives for their time, I left the plant around 4:00 p.m.

Attachment (1)

cc's: Jennifer Hamill, Wisconsin DNR

Standard bcc's:   official file copy w/attachment(s)  
                          originator's file copy w/attachment(s)  
                          originating organization reading file w/attachment(s)

Other bcc's:

Creation Date:	January 17, 2012
Filename:	Madison-Kipp Insp.doc
Legend:	ARD:AECAB:AECAS(MI/WT):JGahris